

**US-PAT-NO:** 5668368  
**DOCUMENT-IDENTIFIER:** US 5668368 A  
**TITLE:** Apparatus for suppressing electrification of sample in charged beam irradiation apparatus

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**Brief Summary Text - BSTX (25):**

According to a first form of the invention, as an apparatus of generating charged particles for neutralization used for suppressing charge up built on the sample surface under irradiation of ion beam, a plasma generation source is used which forms a source gas into plasma by microwave discharge. In plasma, positive and negative charged particles are coexistent to provide, as a whole, an electrically neutral state in which a phenomenon of diffusion of charged particles due to the repulsive action between them is minimized, so that low energy charged particles can be generated at high density. When the plasma exists near the charged up sample surface, only a charged up portion of the sample surface can be neutralized effectively and yet an ion beam per se to be irradiated on the sample through the plasma can be neutralized and then irradiated on the sample. Of course, only electrons necessary for neutralization may be drawn out of the plasma and may be admitted to the vicinity of the sample surface. Accordingly, the first form of the invention can accomplish the aforementioned first and third objects.